

**Ontario Institute for Studies in Education**

**University of Toronto**

**371 Bloor Street West**

**Honour Specialist Physics**

**Course of Study**

Course Code: EAQ2200Y

**1. COURSE DESCRIPTION**

The Honour Specialist Physics Course consists of a series of lectures, seminars, laboratory workshops, field trips and assignments designed to emphasize the expectations, methodology, and content of science at the K-12 grades. The Course is based on the Ministry of Education and Training The Ontario Curriculum, Grades 1-8: Science and Technology, The Ontario Curriculum, Grades 9 & 10 :Science. The Ontario Curriculum, Grades 11 & 12 :Science. The course examines the expectations, strategies for implementing the expectations, and methods and instruments suitable for evaluating the attainment of the expectations. The course also examines the pedagogical and leadership responsibilities of the Science Department Head or Curriculum Leader. It also focuses on the Standards of Practice for the teaching profession as they pertain to Science Education at for all divisions using the reference from the Ontario College of Teachers titled, Standards of Practice for the Teaching Profession. There is a balance between meeting individual needs and preparing for the role of a Science leader in the school and Board.

**2. COURSE TIME ALLOCATION**

Total Time

125 h

Contact Time

100 h

Non-contact Time

25 h

Classroom Contact

80 h

Monitored Contact

20 h

* lectures
* Concept Presentation
* laboratory activities/demos
* demonstrations
* guest speakers
* small group activities
* field trips
* research activities
* mentoring activities
* unit planning
* conferencing with instructor
* concept research
* unit planning
* AV preparation
* lab material prep
* software prep
* readings

Note: The instructor will meet with small groups and individuals during monitored time to facilitate discussions, assist with concept planning, expedite mentoring, respond to Internet searches, etc.

**3. EXPECTATIONS**

3.1 MINISTRY EXPECTATIONS

Honour Specialist courses will provide candidates with opportunities to develop knowledge and competency in:

1. the organization and administration of science education programs for grades 7- 12 inclusive;
2. the design, development, implementation, and assessment of Intermediate and Senior Science programs;
3. the provision of professional development opportunities in science education at all levels.

**3.2 PROFESSIONALISM EXPECTATIONS**

Honour Specialist courses will provide candidates with opportunities to develop knowledge and competency in:

1. describing and modeling standards of practice in the teaching profession in Ontario as outlined in the Ontario College of Teachers document *The Foundations of Professional Practice* (available from www.oct.ca)
2. designing strategies for science department heads to use to nurture and monitor standards of practice in the science departments of their schools.

### 3.3 COURSE EXPECTATIONS

By the end of the course, a candidate in Honour Specialist Physics should be able to demonstrate competence with the following expectations:

1. Demonstrate a mastery of portions of the Physics content of the Intermediate and Senior Divisions.
2. Demonstrate by his/her participation in seminars and workshops, an in-depth knowledge and understanding of the discipline of Physics with examples from the Intermediate and Senior Divisions: appropriate learning expectations; major concepts, principles and laws; processes of scientific inquiry; science, technology, society and environmental issues; manipulative skills, attitudes and values; and the history and philosophy of science.
3. List and describe suitable student and teacher resources applicable to various parts of the Physics policy document. Texts on The Trillium List and the approved learning materials (ALM), handbooks, experiment manuals, readers, A-V materials, teacher's guides, journals, periodicals.
4. Diagnose problems with and correctly operate science equipment currently used in Physics at the intermediate and senior levels.
5. prepare a concept lesson for a Physics topic in the Senior level, including a search of the literature with respect to student misconceptions of the topic, preparing a detailed handout for peers, including a lesson to meet the needs of students of different learning styles, and reviewing the lesson before and after with a peer Coach.
6. Seek out and share Physics enrichment demonstrations, lesson sequences, teaching devices, class experiments, confrontations or motivational devices, and synthesize written and especially oral expositions and demonstrations designed for peers.
7. Evaluate the potential of various learning resources for nurturing the objectives/learning expectations/outcomes stated or inferred in the Ministry Physics documents for the Intermediate and Senior Divisions:
8. Use periodical indexes and the CD ROM to conduct a search for teaching ideas and materials pertaining to contemporary issues in Physics at the Intermediate and Senior levels.
9. List and implement appropriate strategies to ensure sexual equality in the science classroom.
10. Follow correct SI practice when working with physical quantities and outline strategies for teaching these practices.
11. Describe appropriate procedures for handling numerical answers in exercises involving physical quantities: precision, accuracy, and significant digits.
12. Describe and implement a logical format for solutions to numerical problems, such as the GRASP format.
13. Explain the role of values issues and sensitive issues in Physics courses.
14. Describe and implement appropriate uses for calculators and computers in the Physics program.
15. Describe strategies such as cooperative education for integrating Physics resources available in the community into the program.
16. List the major functions of the assessment of student achievement and distinguish among diagnostic, formative, and summative evaluation and among norm-referenced, criterion-referenced, and diagnostic evaluation.
17. Describe the Ontario Assessment Instrument Physics and design observation instruments and paper and pencil instruments to assess the achievement of knowledge, skill, and attitudinal objectives.
18. Design and implement instruments to evaluate teaching performance.
19. Describe the master teacher, supervisory and administrative roles and responsibilities of the Science/Physics department head.
20. List major Physics conceptual gaps and describe teaching strategies to narrow or eliminate the gaps.
21. Describe peer coaching and implement peer coaching strategies with a peer.
22. Describe and evaluate cooperative learning strategies in Physics.
23. Describe and demonstrate strategies for utilizing AV materials in the Physics classroom.
24. Describe strategies designed to cater to different learning styles and design a Physics lesson using one of the strategies.
25. Describe strategies and resources for implementing a science, technology, and society curriculum emphasis in the Physics classroom.
26. Design a department evaluation policy or policies for use in a school.
27. Determine his/her own leadership and personal styles and describe how to interact with peers and superiors for maximum productivity.
28. Demonstrate knowledge of the Ministry of Education expectations and policies with respect to the Intermediate and Senior programs.
29. Describe six forms of curriculum integration which could be used in a secondary school.
30. Demonstrate an awareness of the use of computers to record marks and generate student reports.
31. Demonstrate knowledge of current evaluation and assessment practices including authentic assessment, performance based assessment, and portfolios.
32. Describe how the knowledge of constructivist theory can be applied to the teaching of a concept in Physics

**Specific Expectations for Physics**

**Knowledge:**

1. Demonstrate a mastery of the Intermediate and Senior Divisions Physics curricula for Ontario.
2. Demonstrate a mastery of safe procedures in a physics laboratory and how to develop these in students.
3. Explain various methods of identifying individual student learning styles (colours, 4MAT) and demonstrate how they can be used in developing lessons that will meet the needs of students in the classroom.
4. Identify an extensive range of materials and resources that can be used in the teaching of secondary school Physics.
5. Describe and explain the role (and the changing role) of a Science Department Head.
6. Explain the Constructivist theory and how it is used in science education.
7. Describe the significance of social issues and common everyday examples (air bags, space research, sports etc) in the teaching of Physics.

**Skills:**

1. Use the computer, laboratory probes, computer software (Interactive Physics and others), spreadsheets and the Internet as tools to enhance the learning opportunities of their students.
2. Identify hazards and develop safe laboratory procedures in the physics laboratory.
3. Clearly illustrates how to teach to clarify student misconceptions about a particular topic in Physics.
4. Demonstrate exemplary Science teaching practice.
5. Select and use appropriate resources to develop exemplary lessons (videotapes, CDs, DVDs, labs, etc.).
6. Analyze and critique concept presentations of their peers.
7. Demonstrate effective peer coaching and counseling skills.

**Strategies:**

**3.4 ONTARIO COLLEGE OF TEACHERS LEARNING EXPECTATIONS**

The *Standards of Practice for the Teaching Profession* and the *Ethical Standards for the Teaching Profession* have been embedded in the learning expectations for the Additional Qualification course Honour Specialist Science.

This Additional Qualification course has the following learning expectations for candidates:

1. demonstrating leadership in the implementation of Ministry of Education elementary and secondary school and curriculum policies
2. demonstrating leadership in communicating changes in and implications of provincial legislation and local policies including legal and ethical issues related to teaching Science
3. demonstrating knowledge of child and adolescent development related to the teaching of Science
4. facilitating the creation of learning environments conducive to the intellectual, social, emotional, physical, linguistic, cultural, spiritual and moral development of students
5. demonstrating leadership in anticipating, implementing and evaluating safety procedures and policies in the classroom and beyond
6. demonstrating knowledge of theoretical foundations and methodologies necessary to plan, implement and assess Science programs for students
7. promoting an awareness of current research in Science and an understanding of its implications for teaching and learning
8. demonstrating and analyzing strategies to create an inclusive, equitable and safe learning environment that addresses the diversity of learners, both children and adults
9. demonstrating leadership in accommodating and/or modifying expectations, teaching strategies and assessment practices to address the developmental and/or special needs of students
10. modeling and implementing assessment and evaluation practices based on data analysis and research to improve student achievement and learning
11. demonstrating leadership in accessing and assessing a variety of resources, including technology, within and beyond the educational system to enhance and support student learning
12. demonstrating the ability to integrate information and communication technology into teaching practice
13. demonstrating the organizational and interpersonal skills necessary as a curriculum leader in Science
14. understanding ways to facilitate reflective practice as a means to improve teaching and learning
15. demonstrating the knowledge and skills to facilitate innovation and change to improve learning
16. understanding the issues and challenges related to the teaching of Science
17. understanding how to create and sustain professional learning communities at the school, district and/or provincial level
18. understanding how to develop communication networks that promote collaboration with in-school personnel, parents/guardians and the community.

**3.5 Teacher Expectations**

* The total course time allocation is 125 hours. During online courses this amounts to 100 hours of online time with an additional 25 hours of non-contact time. The online time is further separated into 80 hours of discourse related submissions to the various views and a further 20 hours of logistics and group planning time related to the Unit Planning Assignment, mentoring etc.
* All discourse will be monitored by the instructor. In online AQ courses the expectation of contact is met through discourse and it is expected that candidates will be participating in discussions independently and in various group arrangements amounting to approximately 6 –7 hours per week for a period of 16 weeks/sessions.
* Informal discourse expectations will discussed with you during the class.

**4. ACADEMIC INTEGRITY**

## *What is plagiarism?*

***Plagiarism***, as defined in the [University of Toronto] Code of Behaviour on Academic Matters (Appendix A, Item p). . . is contained in the original (1621) meaning in English: "the wrongful appropriation and purloining, and publication as one’s own, of the ideas, or the expression of the ideas ... of another." This most common, and frequently most elusive of academic infractions is normally associated with student essays. Plagiarism can, however, also threaten the integrity of studio and seminar room, laboratory and lecture hall. Plagiarism is at once a perversion of originality and a denial of the interdependence and mutuality which are the heart of scholarship itself, and hence of the academic experience. Instructors should make clear what constitutes plagiarism within a particular discipline.

The *Code of Behaviour on Academic Matters* (University of Toronto, Governing Council Secretariat, 1995, B.1. d-f) reads:

It shall be an offence for a student knowingly:

* to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e. to commit plagiarism [wherever in the Code an offence is described as depending on “knowing”, the office shall likewise be deemed to have been committed if the person ought to have known];
* to submit, without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course or program of study in the University or elsewhere;
* to submit any academic work containing a purported statement of fact or reference to a source which has been concocted.

I have read the definition of plagiarism, and agree to follow guidelines for avoiding plagiarism on work in this course.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

Course: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Instructors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**5. ASSESSMENT AND EVALUATION**

At the beginning of the course, candidates are provided with the specific expectations and forms of assessment and evaluation that will be used throughout the course. A balanced approach to candidate assessment and evaluation is used. It includes a combination of self, peer and instructor formative assessment, instructor evaluation, and models best practice.

The following list of assessment and evaluation strategies is not exhaustive; it is intended to serve as a guide only.

**5.1 ASSIGNMENTS AND EVALUATION**

The final grade in this course is based on several component parts. These components are summarized on the sheet entitled "Evaluation Plan", which you can use to record your achievement on each part. The assignments are summarized below and described in detail on the accompanying sheets. The marking schemes are indicated on the appropriate checklists and rating scales.

A. Concept Presentation (150 points)

The **Concept Presentation** gives you practice in researching resources for an assigned concept in the discipline in which you are taking the specialist, discussing the focus and approach for presenting the topic with a peer mentor/coach, planning An approximately 60 min presentation on the topic (*including time for questions*). Your concept presentation will give you an opportunity to develop leadership skills for the development of K-12 science curriculum that meets the needs of a diverse group of students. The specific time is determined by your instructor and is based on the number of students in the course. You are to prepare a written summary of the presentation for your peers and the instructor, implement the presentation, and critique the presentation with the assistance of the peer mentor/coach. Finally you evaluate your peer mentor/coach using criteria listed tin the assignment section. After the presentation, the instructor will meet with the presenter to describe what they saw.

This presentation is to be directed at and for an audience or peers, not as if it were presented to a group of students.

(See Assignment: Concept Presentation).

B. Professional Practice (50 points)

The **Professional Practice** exercise gives you an opportunity to assume two roles, that of a mentor/coach and that of someone being mentored/coached. It provides an opportunity for you to assess and reflect on your own professional practice and on the professional practice of a peer. The intent is also that you develop strategies for the future that will allow you to transfer the knowledge and skills learned here for supporting and mentoring other colleagues (perhaps in a future leadership role) as they too learn about mentoring. The assignment is based on the five Standards of Practices for the Teaching Profession and the Ethical Standards for the Teaching Profession developed by the Ontario College of Teachers (OCT) and uses the Concept Presentation as the vehicle for professional growth and reflection. These standards can be downloaded from the OCT website at <http://www.oct.ca>. (See Assignment: Professional Practice Exercise and the rubric used in assessing the professional practices report)

C. Curriculum Planning (250 points)

This assignment has four main parts. The first three parts involve a small team working together to plan an overall curriculum unit plan as well as to prepare an issue-oriented case study and associated assessment tools for one of the topics from the Ministry of Education:

Science: The Ontario Curriculum Grades 11 & 12: 2000;

Science: The Ontario Curriculum Grades 9 & 10: 1999;

Science and Technology: The Ontario Curriculum Grades 1-8: 1998;

The fourth part involves an individual, written response about the process and the applicability of the Unit Plan to an individual school situation and involves the inclusion of differentiated instruction.

The instructors will determine the number of members in each team.   
(See Assignment: Unit Plan Analysis and Case Study and the assessment tools to be used to assess the submissions)

D. Professional Growth (50 points)

This component is based on assignments the instructor gives either to be done in class as part of the instruction, at home in preparation for a future class, or as an assignment to meet a specific course and professional expectation. It involves an assessment of daily participation in class activities, overall quality of work, feedback on Concept Presentations, sharing of “wildcard” (or best practice) teaching ideas and analysis of departmental issues from a leadership perspective. The instructor will provide more specific details.

**5.2 GRADING FRAMEWORK**

The following table summarizes the generic framework that will be used by your instructor to

Guide assessment and evaluation practices. Candidates will find this framework helpful for interpreting grades for all assignments.

|  |  |  |
| --- | --- | --- |
| **Letter Grade** | **Percentage Range** | **Description** |
| A+  A  A- | 90 -100  85-89  80-84 | **Work of exceptional quality**.  The content, organization and style are all at a high level and move the discussion well beyond what was covered in class. The written work demonstrates excellent comprehension of the subject and, where appropriate, integrates existing research and literature. The work also demonstrates sound critical thinking, innovative ideas, and personal engagement. |
| B+  B  B- | 77-79  73-76  70-72 | **Work of good quality with no major weaknesses**.  All of the required elements of the assignment have been fulfilled. The writing is clear and explicit; the coverage and demonstrated comprehension of the topic is more than adequate. Some degree of critical thinking and personal involvement in the work is shown. There is good use of existing knowledge on the subject. |
| C+  C  C- | 67-69  63-66  60-62 | **Adequate work.**  All of the required elements have been included, although some conceptual inadequacies are present. A fair comprehension of the subject is demonstrated, but some weaknesses in content, style, organization, critical awareness, personal involvement and/or use of the literature are apparent. |
| D | 50-59 | **Some elements of the assignment are missing**.  Candidates may complete these elements and re-submit the assignment to raise the grade to a MAXIMUM level of C |
| F | 0-49 | **Failing work**.  The candidate needs to meet with the instructor. |

**5.3 EVALUATION PLAN**

Student Name:

**Ontario Institute for Studies in Education of the UNIVERSITY OF TORONTO**

HONOUR SPECIALIST SCIENCE COURSES ‑ SUMMER SCHOOL

EVALUATION PLAN

|  |  |  |
| --- | --- | --- |
| Assignment | Maximum Points | Points Obtained |
| Concept Presentation (30%) | 150 |  |
| Professional Practice (10%)   1. Mentor Practice 2. Professional Practice Report | 25  25 |  |
| Curriculum Planning (50%)  Culminating Exercise and Assessment Tools  Unit Overview  Issue Oriented Case Study and Assessment Tools  Individual Response to the Group Process | 65  90  65  30 |  |
| Professional Growth (10%) | 50 |  |
| Total (100%) | 500 |  |

**NOTE: A 400 - 500 POINTS B 350 - 399 POINTS F < 350 POINTS**

**All assignments not submitted by the due dates will be penalized unless accompanied by a doctor’s certificate. Late assignments receive a maximum grade of B-.**

|  |
| --- |
| **ATTENDANCE POLICY**  IN ACCORDANCE WITH REGULATION 184/97 ATTENDANCE IN ALL CLASSES, FOR THE DURATION OF THE CLASS, IS MANDATORY. ABSENCES MAY JEOPORDIZE SUCCESSFUL COMPLETION OF THE COURSE.  PLEASE ARRANGE ALL APPOINTMENTS OUTSIDE OF THE COURSE HOURS AS LISTED IN THE CALENDAR. IF AN EMERGENCY OCCURS THAT REQUIRES YOUR ABSENCE THIS MUST BE REPORTED TO BOTH THE COURSE PRINCIPAL AND THE INSTRUCTOR. |

**A. ASSIGNMENT:  CONCEPT PRESENTATION**

Each candidate will plan and give a presentation on the teaching of a concept, including time for questions by peers. A **peer mentor** will act as advisor regarding the focus and approach for presenting the concept, and will observe and make notes during the presentation. (See *Peer Coaching* by Nancy Watson et al). No more than 80% of time will be allotted for the presentation with the remaining time being used for questions and discussion from the group. Peers will provide written feedback on the presentation and the presenter and peer mentor will critique the presentation with the help of the feedback. The presenter will evaluate the mentor and the mentoring process and will submit a report on the process.

The presentation should overview the concept, identify learning difficulties/conceptual gaps/misconceptions, identify resources, activities and demonstrations for overcoming the difficulties/misconceptions and teaching the concept to students, and illustrate the teaching strategies (including strategies to ensure that individual student needs are met, that program can be modified to meet the needs of a diverse group of students.) to be used. You will distribute a summary of the presentation to peers and the instructor. **(Consult the misconceptions journal article collection in the library, and see the modules titled "Learning Styles and Teaching Science" and "Multiple Intelligences and Teaching Science").**

The presentation should include whichever of the following are appropriate:

1. an interesting introduction to the concept;

1. a list of the learning difficulties/misconceptions for the concept;
2. an identification of the expectations specified by the Ministry of Education;
3. an outline for teaching the concept that addresses the different learning styles and/or intelligences;
4. demonstrations and student labs including data logger exercises;

6. the use of video segments, creative visual aids and the chalkboard;

7. reference to any safety considerations;

8. reference to where in the curriculum the concept should be taught;

9. a description and illustration of appropriate instruments for evaluating the concept;

10. a brief description and evaluation of key references;

11. a description of practical applications and societal implications.

12. program modifications that could be used in this concept.

To expedite the presentation, a summary is to be prepared (**maximum** **6** single spaced typed pages).

You are to photocopy enough copies of the handout for distribution to the class and the instructor.

A possible format for the handout is:

|  |  |
| --- | --- |
| 1. candidates names | 1. lesson sequence |
| 1. title of the concept | 1. teaching ideas |
| 1. background information | 1. essential expectations |
| 1. map of concept though K – 12 curriculum | 1. assessment and evaluation procedures |
| 1. description of difficulties/misconceptions | 1. applications and societal implications |
| 1. advance preparation | 1. annotated references |
| 1. special materials needed |  |

The oral part of the presentation will give the candidate an opportunity to display some of the skills of a superior teacher: organization, enthusiasm, initiative, scholarship, ability to commun­icate, pace and timing, skill in handling questions and discussing. Where possible, you should use concrete materials and AV aids should be used to enhance the presentation. The peer mentoring exercise will sharpen your analysis of teaching skills, give you practice in applying the elements as outlined in the *Standards of Practice for the Teaching Profession*, and should lead to improved instruction. Working with a peer mentor will provide first-hand experience with receiving and responding to constructive criticism and feedback. This will help prepare you for the role of department head or program leader.

**PRESENTER: MENTOR:**

**RATING SCALE for INSTRUCTOR ASSESSMENT OF CONCEPT PRESENTATION**

**(HS Sciences)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Criteria & Weightings** | **Descriptions of Criteria** | **Fx** | **D** | **C** | **B** | **A** | **Ex** |
| **PRESENTATION** |  |  |  |  |  |  |  |
| **Organization**  **(25 points)** | * Opener was interesting * Student difficulties were identified and some solutions given * Strategies (more than one) were emphasized * Presentation was logical and linear * Different learning styles were addressed * Different multiple intelligences were addressed * Safety considerations were identified and implemented. | 6 | 14 | 16 | 19 | 22 | 25 |
|  | | | | | |
| **Creativity and Peer Involvement**  **(15 points)** | * Included creative ideas * Interesting presentation methods were used * **Peers were involved** in a creative way. | 4 | 8 | 10 | 11 | 13 | 15 |
|  | | | | | |
| **Ability to Communicate (25 points)** | * Clear * Concise * Audible * Concrete materials were displayed, demonstrated, and used by peers * Audio‑visual devices were used effectively * Command of English was superior * Well modulated * Applications and societal implications were described using appropriate language | 6 | 14 | 16 | 19 | 22 | 25 |
|  | | | | | |
| **Skill in Questioning**  **(15 points)** | * Clear concise questions were asked of peers * Accurate answers were given to questions asked by peers and by the instructor * Presenter controller questioning | 4 | 8 | 10 | 11 | 13 | 15 |
|  | | | | | |
| **Scholarship and Overall Impression**  **(25 points)** | * Superior mastery of the topic was exhibited * Superior mastery of pedagogy (different types) was exhibited * Knowledge of the expectations, how they fit into the topic, unit, course was shown * Presentation left participants with a very positive impression | 6 | 14 | 16 | 19 | 22 | 25 |
|  | | | | | |
| **Pace and Timing**  **(15 points)** | * Realistic amount of information was chosen * Realistic amount of information was taught * Time was spent on important details of content and pedagogy (K/U, T/I, C, A) * Presentation was completed within the allotted time. | 4 | 8 | 10 | 11 | 13 | 15 |
|  | | | | | |
| **OUTLINE**  **(30 points)** | * The presentation was accurately summarized * Accurate and well organized * Any candidate could go back and use the material from the presentation * **Included:** * Candidate’s name, Title of the Concept * Background Information * Description of Difficulties/Misconceptions with suggestions given to dispel or prevent * Advance Preparation for Teacher * Materials Needed * Lesson Sequence * Teaching Ideas * Suggested assessment and evaluation practices * Applications and Societal Implications * **Annotated** References | 8 | 17 | 20 | 23 | 27 | 30 |
|  | | | | | |
|  | **TOTAL** | **/150 POINTS** | | | | | |

**PRESENTER**: **MENTOR:**

**PEER RECOMMENDATIONS TO PRESENTER (CONCEPT PRESENTATION)**

A Summary of these completed forms is due to the mentee *one day* after Concept Presentation.

**Presenter**: **Your Name**:

**Topic**:

Note: Your feedback will be monitored by the Instructor for completeness and validity. Its quality will form part of the subjective evaluation component for the course.

1. List several things that you really liked about this presentation. Consider the five Standards of Professional Practice for the Teaching Profession outlined by the Ontario College of Teachers: Commitment to Students and Student Learning; Professional Knowledge; Teaching Practice; Leadership and Community; and Ongoing Professional Learning.

2. Give several suggestions to help the presenter improve his/her leadership and presentation skills. Refer to the above Standards of Professional Practice.

**THIS PAGE IS TO BE GIVEN TO THE MENTOR.**

### B. ASSIGNMENT: PROFESSIONAL PRACTICE

(This is linked to your Concept Presentation)

The standards of practice are descriptors for the teaching profession. This exercise is designed to have you reflect on and model these standards, and to receive input from a peer on your progress. The exercise consists of seven steps.

1. Identify a Mentor/Coach

Identify a mentor/coach who will assist you with the concept presentation and with your reflection of professional practice. **Note: you cannot double partner (i.e., you must have a mentor/coach for yourself, but you cannot, in turn, be that person’s mentor/coach**.)

2. Review and Reflect on the Five Standards of Practice

Review carefully the five standards of practice for the teaching profession as outlined by the OCT in their booklet titled *The Foundations of Professional Practice* or on their web site at [www.oct.ca](http://www.oct.ca) . Consider ways to include at least three of the standards of practice in your concept presentation.

3. Have a Pre-Presentation Planning Meeting

Arrange a meeting with your mentor/coach prior to your concept presentation. At this meeting discuss how your Concept Presentation will be used as a basis to model and reflect, based on the five standards of practice. For example, you should show superior command of the content dealt with in the concept presentation, clearly illustrating the requirement that “Members of the Ontario College of Teachers know the curriculum, the subject matter….” etc. Other standards of practice to be modeled during the presentation should also be identified, discussed, and agreed on.

As part of the meeting, discuss how the mentor/coach can be of additional assistance with the concept presentation (source of ideas, assisting with equipment on the day of the presentation, etc.). Establish future meeting dates as required.

4. Implement the Concept Presentation and Professional Practice Components

Role of the Presenter: On the day of the concept presentation, model standards of practice appropriate to the presentation and arranged and agreed upon with the mentor/coach.

Role of the Mentor/Coach:

1. As the presentation takes place, make notes of the strengths and weakness of the presentation paying particular attention to those practices identified and mutually agreed upon in the pre-conference.
2. Prepare a one page written summary that can be used as a basis of discussion with the presenter after the concept presentation and as background for the presenter's final report. Address both pedagogy and the OCT professional practices. This written summary is to be based on both your own notes on the presentation as well as notes made by other peers (The mentor is to collect these after the presentation).

5. Have a Post-Presentation Reflection Meeting:

Meet with your mentor/coach to discuss the success of the concept presentation. This discussion should focus on those items in the five standards of professional practice that you agreed to model during the presentation. Any additional strengths or weaknesses identified by the peer assessment should also be discussed.

6. Assign a Mark to the Mentor/Coach

You and the mentor/coach will discuss the mentor’s strengths and weaknesses and will assign and mutually agree upon mark out of 25 points to the mentor/coach. The marks have the following meaning: Exemplary 25; Excellent 21.25; Very Good 18.75; Good 16.25; Fair 13.75; Unsatisfactory 6.25. This mark will be given to the **mentor/coach** in recognition of the work done in assisting the presenter, and on the validity of the mentor's assessment of the professional practices modeled in the concept presentation. This evaluation has been discussed and justified with the mentor/coach prior to being submitted to the instructor.

7. Write the Professional Practices Report

The Mentee (Presenter) will prepare a one to two page professional practices report on the process and the product of the Concept Presentation. The notes made by the mentor/coach during the presentation along with peer comments, the post-presentation discussion and presenter's reflections will be used as background for the report. The professional practices report should include: a brief description of the process that you and your mentor/coach used in this activity, its success, and the findings. The report should also incorporate language contained in the three previously chosen standards of professional practices to illustrate that the discussion was focused around these points when reflecting on the concept presentation. The report should comment on the strengths identified, and should suggest an area where you would like to focus your efforts next year - perhaps worded as a goal. The mentor/coach’s report and the peer feedback sheets must be appended to your professional practices report when it is submitted to the instructor.

Professional Practice Report Assessment.

The instructor will read the presenter's professional practice report, the peer feedback sheets, and the appended mentor’s/coach’s report and will assign a mark out of 25 points to the presenter (mentee). This mark will be assigned to **the presenter** in recognition of the report writing skills, and the reflections on the presenter's professional practice. (See Scoring Rubric: Professional Practice Report)

NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#### Professional Practice

**Mentor Practice Assessment (25 points)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark from Mentee | **Unsatisfactory**  **6.25** | **Fair**  **13.75** | **Good**  **16.25** | **Very Good**  **18.75** | **Excellent**  **21.25** | **Exemplary**  **25** |
| **Comments/Justification from Mentee** |  | | | | | |

**Scoring Rubric: Professional Practice Report (25 points)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Criterion** | **Level R** | **Level 1** | **Level 2** | **Level 3** | **Level 4** |
| **Reference** to elements of the Standards of Practice for the Teaching Profession | The report makes inadequate reference to three of the elements | The report makes limited reference to three of the elements of the standards. | The report makes some reference to three of the elements of the standards. | The report makes considerable reference to three of the elements of the standards. | The report makes extensive reference to three of the elements of the standards. |
| **Connection of the Standards to Observed Practice**  Demonstrates how the Concept Presentation was used to illustrate some of these elements. | The report shows inadequate connections between the standards and the concept presentation. | The report shows limited connections between the standards and the concept presentation. | The report shows some connections between the standards and the concept presentation. | The report shows considerable connections between the standards and the concept presentation. | The report shows a thorough connection between the standards and the concept presentation. |
| **Communication**  Communication of information and ideas | The report communicates information and ideas with inadequate clarity and precision. | The report communicates information and ideas with limited clarity and precision. | The report communicates information and ideas with moderate clarity and precision. | The report communicates information and ideas with considerable clarity and precision. | The report communicates information and ideas with a high degree of clarity and precision. |
| **Reflection**  Includes references to the peer and mentor comments | It is not clear that comments were used in writing the report | Limited reference to comments is evident | Adequate reference to comments is evident | Considerable referencing is evident | The report shows evidence of thoughtful consideration of comments |

## Comments:

## / 25

### C. ASSIGNMENT: CURRICULUM PLANNING

The intent of this assignment is to provide you with the opportunity, to practice aspects of the process of planning a unit of study in a small group (no larger than 3) and for the possible purpose of “department-wide” adoption.

**You must choose your topic in consultation with your instructor.**

**The final product produced by the group can have no more than 40 pages of print.**

**COMPONENTS OF PLANNING ASSIGNMENT**

There are four components to this assignment:

|  |  |  |
| --- | --- | --- |
| **Components** | **Point Value** | **Submission Date** |
| 1. Culminating Exercise and Assessment Tools | 65 |  |
| 2. Overview | 90 |  |
| 3. Issue-oriented Case Study and Assessment Tools | 65 |  |
| 4. Individual Response to the Group process | 30 |  |
| Upload the collection to the class WIKI\* |  |  |
| **TOTAL** | **/250** |  |

\*It is assumed that any needed revisions will be made before uploading the materials to the conference

**PLANNING PROCEDURE AND SEQUENCE**

***Choosing a******Topic***

In consultation with your instructor, and with your group choose a topic for this assignment. Most of these units will be from the 12U curriculum.

# *PART A. Culminating Task and Its Assessment Tools*

A culminating task is an activity undertaken by students at the end of a topic as part of the summative assessment/evaluation of the unit. Since this is used to evaluate students, it must address the OVERALL expectations but should integrate a significant number of the specific expectations from each of the areas of skills and knowledge as outlined in the curriculum document. As well, the task should be linked with the Big Ideas for the unit. A culminating task **does not** introduce expectations to be learned for the first time. There must be adequate opportunities for students to practice the skills required for the culminating task – something which will be incorporated in the next part of this assignment – the unit plan.

Your group is to:

1. identify a suitable culminating task – could be an investigation; could be based in research – it will depend on the unit you are working on.
2. write the background information to be given to the student when the task is introduced (this occurs early on in the unit so students can use what they learn throughout the unit to prepare for the task.
3. outline a meaningful scenario for the students
4. break the task down into manageable steps – students are set up for success when they are provided with process steps. This allows for formative feedback from the instructor.
5. provide assessment tools to be used to **assess the process of doing the task** as well as the **final student product.** The tools must include one scoring rubric and/or rating scale. You may wish to have a checklist or other form of self assessment for students to monitor their own progress.

The culminating task should be no longer than two pages. The assessment tools are in addition to this. The culminating task will be evaluated using the "Scoring Rubric: Culminating Task and Assessment Tools (see **Appendix 1**)

***PART B: The Overall Curriculum Plan***

Your curriculum plan can be or organized in a number of ways. An example is provided in **Appendix 2**, or you may choose to use a document from your School Board that you have used for planning, or you may see your instructor for other planning ideas. (This part of the assignment will be further discussed in class.).

1. You will use a **Design Down** Process to create this unit. Begin by first **clustering all of the expectations into topics** for the unit. Note that there may overlap in these expectations. Also, Make sure to include the expectations from Unit A – Scientific Investigation Skills and Career Explorations which is found in every unit. You will not address all of the expectations in Unit A but you must address some of them in every unit so that by the end of the course they have all been addressed.

2. Next, you will create the **Unit Evaluation Plan**. As this is a unit plan for a 12U course, you can assume the 30% Final Mark will include a written final exam AND a practical, lab based evaluation. This is indicated on the sample Evaluation Plan provided in **Appendix 3**. Plan the Unit **Summative Evaluations** (assessment of learning) which will be used to evaluate the OVERALL expectations ensuring the student has practice for the final 30% course evaluation. Make sure **all** of the categories from the Achievement Chart have been addressed in the Evaluation Plan for the unit, although they may not be equally represented depending on the unit. If possible, assign a weighting to each of the summative evaluations based on the Achievement Chart categories. That is the amount that each evaluation will contribute to the assigned category. Some evaluations may contribute to more than one achievement chart category.

Also, include the **Formative Assessments and Diagnostic Assessments** (assessment for learning and/or assessment as learning) you will use for the unit. Consider using self and peer feedback/assessment. You may want to consider some time for remediation or enrichment. Please note where the **Learning Skills** could be assessed during the unit.

3. Next, design the **Lesson Sequence** to be used to teach the unit.

1. Begin each lesson with a Learning Goal – What should the students learn by doing this lesson? These are NOT just the expectations, they are in student friendly language, scaffolded, and build on success providing incremental exposure to things.
2. The lessons should provide enough detail that someone coming into the department could be given the unit plan and then begin designing Lesson Plans from the unit plan.
3. Suggest Teaching/Learning strategies to use ensuring you are implementing a differentiated approach to learning. There should be a variety of grouping types (individual, groups, pairs etc); a full spectrum of learning styles should be addressed and all expectations for the unit and the applicable expectations from unit A must be addressed.
4. Include activities, investigations, demonstration ideas, technology,
5. Make sure your unit begins by providing “context for developing the related skills and conceptual knowledge necessary for making connections between scientific, technological, social, and environmental issues.” (pg. 16 of The Ontario Curriculum Grades 11 and 12)
6. There should be evidence of attention to equity and diversity as well as environmental education.
7. **Provide the Black Line Masters (BLM)** as appendices for any activity, investigation, homework sheet so that the person given the plan can use the activity, or modify it to match their style in the classroom.
8. Make sure you DO NOT cover expectations that are NOT in this curriculum. There is a tendency to just continue doing what we’ve always done…..don’t just follow one of the textbooks written for the 2000 curriculum document!!

The unit plan will be evaluated using the "Rating Scale for Curriculum Plan" (**Appendix 4**)

***PART C: STSE Issue-oriented Case Study and Its Assessment Tools***

As part of the unit, each group is to write one original issue-oriented STSE case study using one of the STSE expectations from the curriculum document and prepare the assessment tools for assessing students' involvement in the case study. You will also prepare a set of “Teacher Notes” for the Case study and then share your ideas with the rest of the class. Finally the Case Study will be posted on the HS Physics Conference and/or WIKI.

**Description of the Case Study**

A **case study** is an investigation of a set of circumstances that befall an individual or group of individuals. In science, case studies often involve issues. An **issue** is a problem with two or more possible resolutions, any one of which may be satisfactory to many members of society while at the same time affecting all of society. For example, one could write a case study and involve students in what to do with Toronto's garbage. Some alternatives are reduce, reuse, recycle, send it by truck to Michigan, or send it by train to a mine in Northern Ontario. Some issues involved in the garbage problem are safety, cost, and pollution.

The issue should be clearly defined and provide background information to enable students to complete the task/answer the questions, or have them research for the information required. The issue may be addressed in various ways such as Debate, Role Play, Position Paper, Town Hall Meeting, Political Action etc.

1) Choose one (or a combination) of these approaches which best suits an Issue pulled from the unit under study.

* 1. Prepare a handout which you would distribute to your students describing what they should do and how they would do it. Include suggestions such as doing further research of the issue, identifying alternatives, potential consequences, perspectives of stakeholders and possibly “taking a stand”.
  2. Prepare assessment tools (Recording Devices) which you would also give to the students ahead of time and allow for assessment of the process as well as evaluation of the product. The evaluation should address several categories of the Achievement Chart.

**In addition to the written submission described above,** each group will be responsible for creating a set of “Teacher Notes” and planning an activity designed to familiarize each member of the class with the case study created by your group. The organization and timing of these opportunities will be detailed by your instructor.

The Case Study will be evaluated using the "Scoring Rubric: Case Study and Assessment Tools (see **Appendix 5**).

***PART D: Individual Response***

Finally, in essay format, write a MAXIMUM 2 page individual reflection to the group work process. Consider the Unit Plan itself and in reference to your own school situation, describe its usefulness and possible application. What changes and accommodations would need to be made and why? You may wish to comment on a specific T/L strategy or A/E opportunity from the unit plan as an example. Conclude your discussion with a personal comment about the group work process.

The Individual Response will be evaluated using the “Assessment Tool for Individual Response” (See **Appendix 6**)

***PART E: Upload Unit Plan, Case Study and Culminating Task to the class WIKI site.***

(**Appendix 1)**

**RATING SCALE FOR**

**Culminating Task and Assessment Tools**

**STUDENT NAMES**

|  |  |
| --- | --- |
| **STUDENT HANDOUT** | |
| **Authentic, yet creative with clear indicators of success** | **/7** |
| **Clear, concise instructions to students for both process and product** | **/14** |
| **Appropriate, realistic timelines** | **/4** |
| **Aligns well with the expectations for the unit and for unit A** | **/5** |
| **ASSESSMENT TOOLS** | |
| **Authentic – measuring what they were designed to measure** | **/10** |
| **Varied assessment strategies for the components of the task** | **/10** |
| **Clear to students – does not require further information** | **/5** |
| **PRACTICALITY** | |
| **assessment tools are easily transferable to a mark**  **teacher’s time and class time demands are realistic** | **/10** |
| **TOTAL** | **/ 65** |

**OTHER COMMENTS:**

**APPENDIX 2 – SAMPLE UNIT PLAN**

**COURSE: COURSE CODE:**

|  |  |  |
| --- | --- | --- |
| **Unit of Study:** | | |
| **Curriculum: What will students learn?** | **Summary**  What will students be learning and doing in this unit? | **Overall Expectations**  Include the expectations from Unit A as well as the expectations from the Unit you are designing. |
| **Key Questions**   * Create one or two key question which will set the context for this unit. |

|  |  |  |
| --- | --- | --- |
| **Unit of Study:** | | |
| Assessment and Evaluation:  How will I know they’ve learned it? | **Assessment of Learning:**   * What will students DO to show you they have learned what you are teaching them? | Assessment for Learning:  Throughout the unit, students’ achievement of the identified learning goals is monitored ***during the learning*** using a variety of assessment strategies and tools. The core practices and strategies have been identified and embedded in the sample lessons |

**Designing the Learning:**

**Note: A Day is one 75 minute period.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cluster/Topic** | **Day** | **Concept/Sub Topic with Learning Goals for each Lesson** | **Teaching & Learning Strategies** | **Assessment (A) and Evaluation (E) with links to the Achievement Chart (Include Homework/Worksheets)** | **Expectations using lettered codes** |
|  | **1** | By the end of the lesson students will be able to: |  |  |  |
| **2** | By the end of the lesson students will be able to: |  |  |  |
| **3** | By the end of the lesson students will be able to: |  |  |  |
|  | **4** | By the end of the lesson students will be able to: |  |  |  |
| **5** | By the end of the lesson students will be able to: |  |  |  |
| **6** | By the end of the lesson students will be able to: |  |  |  |

**Planning Notes:**

**Accommodations for Special Needs and ELL:**

**Annotated Resources:**

Appendix 3 -

**SPH 4U Course Evaluation Plan**

**30% Final Evaluations**

|  |  |  |
| --- | --- | --- |
| Task | Achievement Chart Focus | Weighting |
| Final Written Exam | K/U, T/I, C, A | 20% |
| Lab Based Performance Task | T/I, C | 10% |
|  |  |  |

**70% Course Work**

**Unit**

|  |  |  |
| --- | --- | --- |
| Summative Assessments: | Achievement Chart Focus | Weighting in Category? |
| Unit Test | K/U, T/I, C |  |
| Culminating Task |  |  |
| STSE Case Study |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Formative Assessments: | Achievement Chart Focus |  |
|  |  |  |
|  |  |  |
|  |  |  |
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|  |  |  |
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|  |  |  |
|  |  |  |
|  |  |  |

*K/U – Knowledge and Understanding; T/I – Thinking and Investigation; C – Communication; A - Application*

**(Appendix 4)**

**Honour Specialist**

**Rating Scale: Overall Curriculum Plan (90 Points)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Criteria** | **Descriptions of Criteria** | **Possible Mark** | **Assigned Mark** |
| **Scope and Sequence** | * Big Ideas are used to focus unit * Learning Goals are stated for each lesson * The clustering of expectations is appropriate * Sequence is pedagogically sound * STSE context is provided at beginning of unit. | **/15** |  |
| **Teaching and Learning strategies** | * Strategies are clearly stated and address/support student learning of the expectations * Differentiation is evident * Equity, diversity and social justice are addresses * Environmental focus is provided * Technology use is integrated throughout unit * Opportunities to develop critical-thinking and problem solving skills are described, created or extended in activities | **/30** |  |
| **Assessment** | * Appropriate to provide students with feed back to help them improve their learning * Diagnostic and formative assessment opportunities are provided * Reflects the learning goals * Learning Skills monitoring is addressed | **/15** |  |
| **Evaluation** | * Evaluation Plan is complete * Varied and reflects multiple categories of the achievement chart * Addresses the overall expectations of the unit | **/20** |  |
| **Overall Impression** | * The plan is organized, clearly presented, easy to follow, professionally done, and has department wide application. | **/10** |  |
| **TOTAL** | | **/90** |  |

**Comments:**

**(Appendix 5)**

**RATING SCALE FOR**

**CASE STUDY AND ASSESSMENT TOOLS**

**STUDENT NAMES**

|  |  |
| --- | --- |
| **STUDENT HANDOUT** | |
| **ISSUE DESCRIPTION - highlights main concerns and/or problems of the topic to be explored** | **/5** |
| **CLARITY – directions for students are easy to understand** | **/ 5** |
| **SEQUENCING AND ORGANIZATION – parts of the process are logically separated and chronologically ordered** | **/ 5** |
| **ALLOWS FOR STUDENT ACTIVITY AND CREATIVITY – while expectations for participation are clear, there is room for unique student ideas** | **/ 2** |
| **ASSESSMENT TOOLS** | |
| **PROCESS – is assessed separately and in a timely manner** | **/ 2** |
| **PRODUCT assessment does the following:** |  |
| **~ addresses several possible assessment strategies** | **/ 5** |
| **~ addresses appropriate and varied categories of the Achievement Chart** | **/ 5** |
| **~ is clear and easy to follow** | **/ 4** |
| **~ credits originality, creativity and participation** | **/ 2** |
| **OVERALL** | |
| **~ links well to Unit and STSE expectations** | **/10** |
| **~ is motivating** | **/ 5** |
| **~ shows originality** | **/ 5** |
| **TEACHER NOTES** | |
| **~ provided for implementation by the teacher with answers** | **/10** |
| **TOTAL** | **/ 65** |

**OTHER COMMENTS:**

(**APPENDIX 6)**

**ASSESSMENT TOOL FOR INDIVIDUAL RESPONSE**

**Student Name:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category & Criteria** | **Possible Mark** | **Assigned**  **Mark** | **Instructor**  **Comments** |
| **Reflection on Process**  Rich detail. Insightful. Makes reference to: individual’s contribution to group, group dynamics, group learning, group communication. Identifies strengths of the group (ie. Dynamics). Identifies group frustrations and what the individuals did to resolve them. Comment on the application and relevance of the group process (group work, reflection on the group work) to the individual’s own classroom and usability in department situations. | 15 |  |  |
| **Usefulness to Individual’s School and Accommodations that Need to be Made for Said School**  The individual’s school is described in light of social dynamics, student body, unique characteristics, and **school culture**. Statement of usefulness of this unit to the individual’s school, with explanation and justification (but not referenced). Analyse links (in the unit) to the described school community and students. | 15 |  |
| **TOTAL**  **No bibliography or footnotes accepted - this is personal** | 30 |  |

**D. ASSIGNMENT: PROFESSIONAL GROWTH (50 points)**

These points will be awarded based on a collection of activities and assignments including:

**Participation**

This will be based on the quality of your work throughout the course and on assignments the instructor gives either to be done in class as part of the instruction, or at home in preparation for a future lesson/activity. Another part of the participation is gleaned from evaluation of active participation in all assignments.

**Concept Presentation Feedback**

This feedback must be constructive and specific to each person’s concept presentation. You will fill in the feedback form and provide the presenter with constructive feedback that will allow them to grow as a teacher.

**Best Practice Teaching Ideas**

These Best Practice Teaching Ideas (or “Wildcards”) are to be presented at various times during the course according to a pre-arranged sign up sheet. They should be a motivator that adds spice to a subject and grade level of your choice. Make sure you discuss why you have chosen this idea, how it might benefit your students, if you have tried it before, how you might modify it for the future (or maybe not do it at all). This is an open-ended presentation format that will provide great ideas for your peers.

**Departmental Issues Analysis and Leadership**

This component includes assuming the role of whole group discussion leader. Discussions will involve issues determined by the class that are typical in a school science department.

***Tentative* Calendar for Honours Specialist – Biology/Physics AQ 2009**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Monday | Tuesday | Wednesday | Thursday | Friday |
| 29 | 30 | 1 | 2 KT  Intro to HS Bio  Course Overview  Get to Know You  Standards of Practice  Biology/Physics Courses – Scope and Sequence (Grade 1 – 12)  Library Tour & Student Cards | 3 KT  Learning Styles  Differentiated Instruction  Assessment and Evaluation  CP Topic Finalized  WC x 2  Unit Plan Assignment  Work Time (Unit Plan) |
| 6 MP  Literacy  Teaching how to use Textbooks  CP x 2  WC x 2  Work Time (Unit Plan) | 7 MP Special Education  CP x 2  WC x 3  Work Time (Unit Plan) | 8 MP  Safety in Science  CP x 3  WC x 2  Work Time (Unit Plan) | 9 KT  10:00 – 11:30 Maureen Callan  (MoE) – Revised Curriculum  CP x 2  WC x 2 | 10 KT  **Culminating Task and Assessment Tools Due**  Teams-Games-Tournament  CP x 2  WC x 2  Work Time (Unit Plan) |
| 13  Inquiry Based Learning  CP x 3  WC x 3 | 14  Nature of Science  CP x 3  WC x 2  Work Time (Unit Plan) | 15 CP x 3  WC x 2 | 16  **Unit Plan and BLM (except Case Study) Due**  Paul Kortenaar (OSC)  CP x 3  WC x 3 | 17  **Case Study and Assessment Tools Due**  Field Trip – Brickworks/Todmorden Mills |
| 20  Leadership  CP x 2  WC x 2 | 21  **Individual Response Due**  Susanna Reichling (TDSB)  Biotech Demos/  Sarah Torrie (PI) – Modern Physics in the Grade 12 Curriculum  CP x 1  WC x 1 | 22  Field Trip to OSC - Optics | 23  Sharing of Resources  Instructor/Teacher Conferences  Meeting of the Minds (location TBD) | 24  Feedback from Mentor to Mentee is due the day after the Concept Presentation. The Professional Practice Report is due to the instructor two days after the Concept Presentation. |